

### **REMARKS**

Claims 1-2, 4-5, and 7-12 are pending in the present application, claims 3 and 6 having been cancelled without prejudice or disclaimer. The Office Action and cited references have been considered. Favorable reconsideration is respectfully requested.

Claims 1-2, 4-5, and 7-9 were rejected under 35 U.S.C. §103 as being unpatentable over Qiu (U.S. Patent Application No. 2004/0145805) in view of Hansen (U.S. Patent Application No. 20043/0061687), Nagle (U.S. Patent Application No. 2002/0092973) and Oberhardt (U.S. Patent Application No. 2002/0028471). This rejection is respectfully traversed for the following reasons.

Claim 1 recites a device for counting fine particles comprising a transparent lower substrate having fine lattice patterns for counting the fine particles on an upper surface thereof, wherein the lower substrate is made of plastic; a transparent unitary upper substrate stacked on the lower substrate, wherein the upper substrate comprises a recess formed in a bottom surface of the upper substrate; a fill chamber formed by said recess and said transparent lower substrate when the substrates are stacked together; and an injecting hole formed on an upper surface of said upper substrate leading into the recess for injecting the sample into the fill chamber. An area of the fill chamber in the upper and lower substrates is transparent for a microscopic observation; and the fine lattice patterns are formed in a predetermined place of the area in which the fill chamber is formed on the lower substrate. The fine lattice patterns

formed in the upper surface of the lower substrate are positive grids. The upper and lower substrates are directly bonded and thus form an integrated body. The positive grids and the lower substrate are formed by injection molding so that form a unitary body. This is not taught, disclosed or made obvious by the prior art of record.

Applicants respectfully disagree and submit that the presently claimed inventions as amended are completely different from Qiu, Hansen, Nagle, and Oberhardt, or any combination thereof.

### ***1) Comparison with Qiu***

#### **(1) Positive grids formed in the upper surface of the lower substrate**

The grids of Qiu are formed on the top substrate. However, the fine lattice patterns of the present application are formed on the lower substrate. The Examiner asserted that the difference of the position of the grids is not important difference. Applicant does not agree.

The fine lattice patterns formed on the lower substrate are definitely different in the effect from the grids formed on the top substrate, that is, according to the position of the grids, the effects of the device are different in result.

In Qiu, the grids are formed on the top substrate, and if the depth of field (DOF) is narrow, focusing is difficult. The present application is aimed at counting cells, and if a sample including cells is injected into chip, the cells sink to the bottom of the chip. Therefore, the present application which the positive grids are formed on the lower substrate can focus exactly, if the depth of field (DOF) is very narrow.

Further, the present application, a device for counting cells having positive grids, has effect that it is possible to counting cells exactly. Because positive grids ameliorate the problems that cells fall into the negative grids and that cells gather on the negative grids.

## **(2) Transparent lower substrate made of plastic**

In Qiu, the top layer including the grid lines is a thin film layer, that is, counter grid film (top layer) is formed by using thin film. Top layer made of thin film layer couldn't be used for a base layer. However, in the present application, the lower substrate is made of plastic, and it is possible that form the positive grids in the lower substrate.

Therefore, Qiu could not provide the above effects of lower substrate including the positive grids such as the present application.

## **(3) Positive grids and lower substrates formed by injection molding**

Qiu discloses the process of fabricating the counter grid film in "Reduction to Practice" in 7-8 pages of the description. The process includes the steps of A) Make a master tool which has a negative image of the grid line pattern, B) Prepare a UV curable resin, C) Cast the UV curable resin between the base substrate and the master tool, D) Expose the assembling with UV, which polymerized the UV curable resin, resulting in a film which has a grid pattern, E) Remove the grid film from the master tool, F) Repeat the step C to D to product multiple grid films.

According to the above description of Qiu, the top film and the grid lines are formed separately. However, in the present application, the positive grids and the

lower substrate are formed **by injection molding at the same time** so that form a unitary body.

The effects of unitary body are described below.

**(4) Unitary body of upper substrate and lower substrate & unitary body of Positive grids and lower substrates**

Qiu discloses the elements, Counter grid film (top layer), Space adhesive and Microscope slide in "Reduction to Practice" in 7-8 pages of the description. Further, in the above description, Qiu discloses that Counter grid film consists of two layers.

Therefore, Qiu consists of four layers, that is, a Microscope slide (base layer), spacer adhesive, film top layer and grids layer (Counter grid film). However, the present application is characterized in that **the upper and lower substrates are directly bonded and thus form an integrated body**, further, **the positive grids and the lower substrate are formed by injection molding so that form an unitary body**.

Therefore, the device of the present application consists of two layers.

A device comprised of two layers has effects to simplify the manufacturing process and thus to make mass production possible. Further, the present application being comprised of two layers can control exactly the height of the channel, while Qiu comprised of four layers cannot control exactly the height of the channel, because the possibility which errors of junction between spacer and substrates occur is high. Because, the height of the channel is relevant to the capacity of sample, in the present application which checks out intensity of sample by measuring the number of the cell

regarding the fixed capacity of sample, it is very important to control the height of the channel exactly.

***2) Comparison with Hansen, Nagle and Oberhardt***

Hansen, Nagle and Oberhardt do not disclose the above technical features of the present application. Therefore even assuming it would have been obvious to combine the teachings of Qiu with Hansen, Nagle and Oberhardt, the result would not have yielded the claimed invention.

For at least these reasons, Applicant respectfully submits that claim 1 is patentable over the prior art of record whether taken alone or in combination as proposed in the Office Action. Claims 2, 4-5 and 7-9 are believed to be patentable in and of themselves, and for the reasons discussed above with respect to claim 1, from which they depend.

In view of the above amendment and remarks, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections of record. Applicant submits that the application is in condition for allowance and early notice to this effect is most earnestly solicited.

If the Examiner has any questions, he is invited to contact the undersigned at 202-628-5197.

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Respectfully submitted,

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